Amendments to the Specification

Please replace the paragraph at lines 5-25 on page 3 with the following amended paragraph:

U.S. Patent No. 3,871,445 in the name of Oskar Wanka, Friedrich Gutlhuber and Hermann Graf describes conventional design of reaction apparatus for carrying out exothermic and endothermic chemical reactions, having a shell in which there is arranged a vertical ~~next~~ nest of contact tubes. These contact tubes, which contain a catalyst material, have their opposite ends secured, in a fluid-tight manner, into respective headers and open, at their opposite ends, into upper and lower heads connected to the shell, reaction gases flowing through the contact tubes are supplied and removed through these heads. According to the patent, a heat exchange medium is pumped through an external heat exchanger and is supplied and discharged to the shell through respective axially spaced annular supply and discharge conduits, to flow over the contact tubes. Baffles are arranged in the shell to extend transversely to the length of the tubes to direct the heat exchange medium to flow alternately in opposed radial directions over the tubes between the supply and discharge conduits. At least one additional annular circuit is arranged at a point of the shell intermediate between the supply and discharge conduits, is connected to the heat exchanger and the shell, and supplies and discharges a partial amount of the heat exchange medium. In one of these complex examples, several such additional annular conduits are arranged at respective points of the shell intermediate between the supply and discharge conduits. In another, diaphragms or partitions divide the shell side into separate compartments each of which has a respective heat exchanger associated therewith.

Please replace the paragraph at line 25 on page 3 to line 13 on page 4 with the following amended paragraph:

More recently, U.S. Patent No. ~~3,871,445~~ 3,898,295 in the name of Oskar Wanka, Friedrich Gutlhuber and Cedomil Persic describes a multistage reaction apparatus for carrying out exothermic or endothermic catalyst reactions

comprising a plurality of separate stages which are arranged sequentially within the reaction vessel and consecutively passed through by the reaction gas. Each stage includes a separately removable module filled with a catalyst, and a gas cooler in the form of a heat exchanger mounted downstream of the module. Each heat exchanger represents a controllable partial cooling circuit and all of the exchangers are interconnected by a common circulation system serving to balance out larger temperature variations and to supply the partial circuits. The common circuit, including a ~~man~~ main heat exchanger and a pump mounted in the return branch or branches of the circuit and the partial circuits or exchangers are controlled by valves or three-way control members and may also each comprise a pump. According to the patent such complex multistage reaction apparatus for carrying out exothermic or endothermic catalytic reactions in which the reaction gas subsequently passes through several beds of catalysts placed in transversely arranged cases and is cooled down or heated up in each such stage by means of a heat exchanger whose partial medium circuit is controllable by valves or three-way control members and with the aid of a main circulation system is thereby capable to hold the temperature of the reaction gas uniformly distributed over the cross-section of the reactor and, at the entrance of the stages, on the substantially same level.

Please replace the paragraph at line 30 on page 4 to line 13 on page 5 with the following amended paragraph:

All the above-described methods are essentially based on modifying the heat transfer from the contact tubes which contain heterogeneous catalyst after this heat has been produced by the chemical conversion reactions therein. In a paper titled, "An Alternative Method to Control the Longitudinal Temperature ~~Profilein~~ Profile in Packed Tubular Reactions (ING. CHIM. ITAL., v. 12, n.1-2, pp. 516, gennaio-febbraio 1976) authors P. Fontana and B. Canepa credit P. H. Chalderbank, A. Caldwell and G. Ross as suggesting another method whereby the heat generation rate is controlled at the source, by mixing catalyst-containing pellets and inert pellets ~~invariable~~ in variable ratio along the axial co-ordinate. See "Proceedings of the 45h European Symposium on Chemical Reaction Engineering" (Pergamon Press, London 1971). Charging a plurality of contact

tubes with a mixture of catalyst-containing pellets and inert pellets according to a prescribed variable ratio along the axial co-ordinate, clearly complicates the loading process as well as recovery of catalyst values from deactivated catalyst. Whether or not such a method could in any way be more useful than previous described methods, it is clearly based on the regulation of the heat produced per unit of time and volume of the bed without altering the means for transfer of such heat from the outer surface of the tubes.

Please replace the paragraph at line 19 on page 13 to line 2 on page 14 with the following amended paragraph:

This embodiment of the invention is illustrated in Figures 4 and 5. The reactants and any diluents are fed via one or more feed lines **21** into the inlet distribution ~~manual~~ manifold **22**. The reactants and diluents pass through a plurality of catalyst containing conduits **23** in a first zone to a first crossover chamber **24**. The reactants, any diluents and any reaction products from the previous zone flow pass from crossover chamber **24** through a plurality of catalyst containing conduits **25** in a second zone to a second crossover chamber **26**. The reactants, any diluents and any reaction products from second zone pass from crossover chamber **26** through a plurality of catalyst containing conduits **27** in a third zone to a third crossover chamber **28**. The reactants, any diluents and any reaction products from third zone pass from crossover chamber **28** through a plurality of catalyst containing conduits **29** in a fourth zone to an outlet manifold **210**. The reactor effluent exits the reactor via line **211**. The heat transfer medium enters annular space **212** (i.e. the unshaded) surrounding the conduits in each zone via line **213** and exits via line **214**. Optionally, additional reactants and/or diluents may be introduced into one or more of the crossover chambers via lines **215, 216** or **217**. In these figures, the catalyst containing conduits are represented by the shaded areas on the figures.